

Making the Curriculum Connection Using Technology

*What the research says
about how to use technology to facilitate
differentiated instruction*

Objectives from research to practice

Create long range plans to address technology curriculum integration needs for learners with a range of challenges

Discover materials that are flexible and powerful enough to help all students maximize progress

Recognize software or website features that mitigate learner need and offer universal design

Differentiated Instruction

- Strategies (**tools and methodology**) that enable all students to participate and make progress in the **general curriculum**
- Educators provide additional support to students who need it during regular instruction
- Facilitates being able to individualize instruction for a diverse group

Definitions.

Differentiated Instruction

- Can be enhanced by use of **technology scaffolds**
- Technology scaffolds increase teacher capacity to individualize instruction for a range of learners
- Especially useful in support of learners with reading and writing difficulties or mathematical conceptual understanding challenges

Universal Design for Learning

Based on creating **flexible goals, methods, materials, activities and assessments** that consider learner diversity.

Centers the need for multiple approaches to meet the needs of diverse learners

Mirrors the universal design movement in architecture (curbs, cuts, and close-captioned television—all universally designed to accommodate a wide variety of users)

Features that help those with challenges can benefit everyone.

Uses technology's power and flexibility to make education

Universal Design for Learning

- Multiple means of representation, to give learners various ways of acquiring information and knowledge
- Multiple means of expression, to provide learners alternatives for demonstrating what they know
- Multiple means of engagement, to tap into learners' interests, offer appropriate challenges, and increase motivation
- This classic definition **DEPENDS** on technology integration

Assistive Technology

- The Individuals with Disabilities Education Act (IDEA), the federal special education law, provides the following legal definition of an assistive technology device: "**any item, piece of equipment, or product system... that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.**"
- The term assistive technology encompasses a broad range of devices from "low tech" (e.g., pencil grips, splints, paper stabilizers) to "high tech" (e.g., computers, voice synthesizers, braille readers). These devices include the entire range of supportive tools and equipment from adapted spoons to wheelchairs and computer systems for environmental control.

instructional areas in literacy

To increase student access to knowledge contained in text (reading to learn):

- Provide *strategic instruction* to help students organize reading and writing;
- Use *diversified materials* to provide several entry points into the content material;
- Enhance reading comprehension by teaching students how to *summarize big ideas*.

instructional area

Common learner characteristics

- how to consider issues with common instructional tasks

Overview of instructional techniques

- what research says about effective differentiated strategies

Technology scaffolds

- technologies that can augment instruction

Strategic Instruction

Common learner challenges in literacy

- Difficulty organizing information and ideas, identifying mistakes and applying correction
- Difficulty with strategic process in reading and writing tasks
- Awkward decoding
- Difficulty sounding out unexpected words
- Confuse letters or syllables and their sounds when forming words

Strategic Instruction

Overview of instructional techniques (coaching)

- Designed to teach students how to apply techniques and principles or rules in order to solve problems and **complete tasks successfully and independently**
- Curriculum design that integrates big ideas
- Content (**rules**) that is applicable to multiple contexts
- Integration of confusing concepts and facts as they are mastered (**anchored instruction**)

Strategic Instruction

Technology scaffolds - Picture Cards

- Visual prompts or to support recall of important vocabulary or daily activities
- Can be accompanied by text
- Bypass the need to rely on decoding print to sound and then sound to meaning
- Visual association lightens working memory cognitive load so learner **begins without failure**
- Used to provide meaningful associations first to words, then combine into simple sentences

Strategic Instruction

Technology scaffolds - Text Readers

Hear word in context of reading passage to build word recognition

Elementary - practice letter recognition, word blends, vocabulary building, sentence structure and paragraph writing

Secondary - practice prefixes, suffixes and word roots

Fluency increases as learner reads along for repeated practice

Increase word recognition, speed and confidence

Strategic Instruction

Technology scaffolds - Text Readers

- Match learner support with built-in features to build independence
- Highlight tools to identify new vocabulary
- Text-to-speech to look up words in a talking dictionary
- Built-in thesaurus to help expand vocabulary and word study
- Multi-sensory study tools **build learner confidence**

Chap 12
go to ????

If you read this book to chapter 12 you know that my friends got out of the tunnel. Let me tell you you know that this book is not to be seen by teacher so don't show to teacher because it might have cursing but if the teacher gets this that it is for someone

Retyped by Joshua using Microsoft Word and Co: Writer

Chapters 13 go to ????

If you have read up to this point you know that I and my friends and I got out of the hole. Let me tell you that if this book gets seen by the teachers don't tell that I wrote this book. It will have cursing in it. If the

Diversified Materials

Common learner challenges in literacy

Need instructions repeated or help with notes to support information

Need help to identify important points, main ideas or key concepts

Understand when someone else reads or explains

Hands-on exploration facilitates new learning

Might not seem to value reading

Diversified Materials

Overview of instructional techniques

Multiple forms of engagement facilitates effective learning outcomes

Teachers need to represent instructional content in multiple ways

Learners need multiple means of expressing understanding

Offer text content in multiple formats for learner flexibility – NIMAS
www.bookshare.org, Learning Ally, Tarheel Reader, ReadingA-to-Z,
etc.

Teachers create differentiated learning materials using text - modify readability

Diversified Materials

Technology scaffolds - Multimedia

- High level of control so learner can express content
- Concepts mastery reflected in unique ways
- Access information at individual pace
- Ownership in content and projects across the curriculum (**students**)
- Create study guides, learning activities and content games (**students and teachers**)
- Highly interactive and individualized

Diversified Materials

Technology scaffolds - Multimedia

- Tasks change from individual to interactive and immediate (**for project based learning**)
- Projects are mental expressions of research and exploration of topics in visual, auditory and tactile approaches
- Research and information becomes more meaningful and personal
- Projects can be shared and evaluated (**rubrics**)
www.rubistar.4teachers.org
- Textbooks and other curriculum materials can be made universally available using multimedia learning

Summarize Big Ideas

Common learner challenges in literacy

Difficulty organizing broad content

Process stands in the way of content development

Grammar and spelling stand in the way of expressing ideas

Limited expressive and written language skills

Summarize Big Ideas

Overview of instructional techniques

Highlight key content information **before** presenting it during instruction

Present specific information in **multiple** formats

Help learners know broad comprehension questions and **recall prior knowledge** about current topics to serve as a framework for any new information as it is explained and introduced

Summarize big ideas through **multiple** representations

Knowledge transfer is facilitated if learners organize ideas into broader content that is taught


Access to prior **background** knowledge is key in solving new problems


Summarize Big Ideas

Technology scaffolds for literacy

- Mind mapping and graphic organizers to organize thoughts and outline main ideas
- Graphic-based word processors to learn and study words
- Text-to-speech software for re-reading material and enhance fluency.
- Anchor background knowledge

- Concern - do students learn skills or do they use tech as a crutch?
- Research - tech does not automatically do the work - kids still need academic strategies
- Teachers must provide explicit strategy instructions for **both** academics as well as in how to use technology tools effectively
- Teachers must explore tools and applets to plan how the meet curriculum goals and

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- Students must understand the academic task and experience guided process practice
 - Students benefit from guided goal setting and organizational planning
 - Students benefit from explicit instructions in how to use technology tools
 - Technology must be used throughout the learning process, not just for publishing

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- Teachers must plan instructional activities using technology: BEFORE (guide content and process); DURING (extensions and rehearsal) and AFTER (generalize)

research to practice!

- Create long range plans to address technology curriculum integration needs for learners with a range of challenges
- Discover materials that are flexible and powerful enough to help all students maximize progress
- Recognize software and website features that mitigate learner need and offer universal design
- Find Differentiated & Universal Curriculum Software

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Now...Let's get to work!